

REMARKS/ARGUMENTS

Prior to this amendment, claims 1-30 and 32-36 were pending. In this amendment, claims 1, 4-7, 10, 14-15, and 28-29 are amended. No claims are added or canceled. Thus, claims 1-30 and 32-36 remain pending.

Rejection under 35 U.S.C. 103(a), Chatterjee, Moore, and Humlicek

Claims 1, 2, and 4, are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatterjee et al. (U.S. Patent Application Publication No. 2004/0024962) in view of Moore (U.S. Patent Application Publication No. 2004/0003135) in further view of Humlicek et al. (U.S. Patent No. 5,822,782).

Claims 1-14, 36

Claim 1 is allowable over the cited references, either alone or in combination, as those references fail to teach or suggest all the elements of claim 1. For example, claim 1 recites:

*a RAID class driver including
a first physical device object representing a RAID system
comprised of a plurality of physical disks,
a plurality of functional device objects, each associated with one of
the physical disks and adapted to interface with a second physical device object
representing that physical disk, wherein each second physical device object
provides a RAID-specific device identification, wherein the first physical device
object is attached with each functional device object, and wherein each functional
device object is associated with a different physical disk.*

In Moore, a bus driver 260 (540, 545 in FIG. 5) performs various operations for the bus 162, which connects the device 165 to the controller 160. *See Moore*, ¶ 27. A controller driver 255 (530, 535) is associated with controller 160. *Id.* A composite driver 250 (520, 525) resides in the system memory 155 and the FDO 520 is attached to the device stack 500, along with the device drivers 510, 515. *Id.*, ¶ 36. Thus, the device drivers 510, 515 reside upstream (toward the operating system) from the controller driver 255.

Accordingly, the combination of Chatterjee and Moore would have the FDOs and the PDOs of the device drivers upstream from controller 1 of Chatterjee. The controller 1 accesses one or more logical drives, e.g. LD2 and LD3. *Id.*, FIG. 5 and ¶ 40. A logical drive is

an array of physical drives that are seen as a single drive. *Id.*, ¶ 36. Thus, each logic drive may be a RAID system made up of a plurality of physical disks when controller 1 PDO is a RAID controller. *Id.*, FIG. 4 and ¶ 42.

As the controller 1 is associated with an entire RAID system, each of the PDO or FDO objects that are upstream are also associated with an entire RAID system. Thus, none of the PDOs or FDOs are "*each associated with one of the physical disks" of the RAID system "and adapted to interface with a second physical device object representing that physical disk," as recited in claim 1. Moreover, each PDO or FDO upstream would not be "*associated with a different physical disk" of the RAID system.**

Note that the cited teaching of Humlicek does not make up for the deficiencies of Chatterjee and Moore. For at least these reasons, claim 1 is allowable over the cited references. As claim 1 is allowable, dependent claims 2-14 and 36 are also allowable for at least the same rationale.

Rejection under 35 U.S.C. 103(a), Chatterjee, Moore, Humlicek, Merkey

Claims 3, 28, 29, and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatterjee, Moore, and Humlicek in further view of Merkey (U.S. Patent Application Publication No. 2003/0070043).

Applicants submit that independent claim 28 should be allowable for at least a same rationale as claim 1. For example, claim 28 recites "*binding a respective RAID-specific functional interface to each physical disk having a RAID-specific device identification; binding all of the RAID-specific functional interfaces to a same disk object representing the entire RAID system and providing the operating system with a standard disk device identification via the disk object.*"

As claim 28 is allowable, dependent claims 29-30, and 32-35 are also allowable for at least the same rationale.

Rejections under 35 U.S.C. 103(a), Chatterjee, Moore, and Humlicek in view of ...

Claims 5- 10 and 13 are rejected under 35 U.S.C. 103(a) in further view of Lu (U.S. Patent Application Publication No. 2004/0073747). Claims 11 and 12 are rejected under

35 U.S.C. 103(a) as being unpatentable over Chatterjee, Moore, Humlicek, and Lu in further view of Frank et al. (U.S. Patent Application Publication No. 2004/0160975). Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chatterjee, Moore, and Humlicek in further view of Brantley Jr. et al. (U.S. Patent No. 5,163,149). Claim 30 is rejected under 35 U.S.C. 103(a) in further view of Merkey (U.S. Patent Application Publication No. 2003/0070043) in further view of Frank. Claims 36 is rejected under 35 U.S.C. 103(a) in further view of Rezual Islam et al. (U.S. Patent No. 6,282,670).

The cited teachings of Lu, Frank, Brantley Jr., Merkey, and Islam either alone or in combination, do not make up for the deficiencies in the cited references with respect to these claims.

Rejection under 35 U.S.C. 103(a), Chatterjee in view of Humlicek

Claims 15, 22, and 23, are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatterjee in view of Humlicek et al. (U.S. Patent No. 5,822,782).

Claim 15 is allowable over the cited references, either alone or in combination, as those references fail to teach or suggest all the elements of claim 15. For example, claim 15 recites "*wherein the RAID controller is not adapted to interface with any of the plurality of disks.*"

In Chatterjee, controller 1 (220 in FIG. 2), which is the asserted RAID controller, interfaces with the logical drives LD0-LD3. *See Chatterjee*, FIG. 6 and ¶ 46. If controller 1 fails, the controller 0 takes over interfacing with these logical drives, or vice versa. *Id.*, ¶ 46. Thus, the embodiment of FIG. 5, both controllers interface with the physical disks of these logical drives. In contrast, claim 15 recites "*wherein the RAID controller is not adapted to interface with any of the plurality of disks.*"

In FIG. 5, controller 0 PDO interfaces with logical volumes LD0 and LD1. Thus, the controller 0 PDO interfaces with different logical volumes as controller 1 PDO, which interfaces with logical volumes LD2 and LD3. As stated above, each logical drive LD1-4 is a different RAID system. *Id.*, ¶ 36. Thus, controller 0 does not interface with any of the disk drives of RAID systems LD2 and LD3, which controller 1 PDO interfaces. Accordingly, this

embodiment of FIG. 5 does not teach or suggest "*a first disk controller adapted to interface with at least a portion of the plurality of disks*" of the RAID system represented by the physical device object of the RAID class driver, as recited in claim 15.

Thus, Chatterjee does not teach or suggest each and every limitation of claim 15. Note that the cited teaching of Humlicek does not make up for the deficiencies of Chatterjee.

For at least these reasons, claim 15 is allowable over the cited references. As claim 15 is allowable, dependent claims 16-27 are also allowable for at least the same rationale.

Rejections under 35 U.S.C. § 103, Chatterjee and Humlicek in view of ...

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chatterjee and Humlicek in further view of Merkey. Claims 17-19 and 21 are rejected under 35 U.S.C. 103(a) in further view of Lu. Claim 20 is rejected under 35 U.S.C. 103(a) in further view of Lu in further view of Gajjar (U.S. Patent No. 5,787,463). Claims 24-27 are rejected under 35 U.S.C. 103(a) in further view of Frank et al. Claim 35 is rejected under 35 U.S.C. 103(a) in further view of Merkey in further view of Rezual Islam et al. (U.S. Patent No. 6,282,670).

The cited teachings of Lu, Frank, Gajjar, Merkey, and Islam either alone or in combination, do not make up for the deficiencies in the cited references with respect to these claims.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

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